

ENVIRONMENTAL ASBESTOS AND INCIDENT MESOTHELIOMA IN CALIFORNIA
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Objective: To examine the relation between mesothelioma incidence and environmental asbestos in Calif. during the period 1988-97.

Methods: Ecological study at county and census tract level using GIS approaches. Analysis of 2949 incident mesothelioma cases and the digital map of ultramafic rocks in Calif. that are the principal source of asbestos in the environment.

Results: Exact residential addresses at diagnosis were available for 93% of cases and matched to a unique intersection. 7% of cases were matched to a 5-digit zip vicinity. Mesothelioma cases were geocoded on the Calif. state map and assigned to census tracts. Most cases were located in cities near the West Coast or along rivers in Calif., most likely reflecting occupational asbestos exposure. Population-weighted correlation analysis (1990 population) showed mesothelioma incidences are significantly correlated with asbestosis mortality ($P < 0.0001$) and population-weighted distance to the nearest asbestos deposits ($P = 0.0016$) at county level. GIS buffer analysis showed the ten-year age-adjusted mesothelioma incidence aged 35+ (12.5 per 100,000) in asbestos deposit areas was not significantly higher than those in their buffers. Mesothelioma incidences within 3, 4, 5, 6, 7, and 8 km buffers were 16.4, 15.5, 17.6, 17.6, 16.7, and 18.9 per 100,000 respectively, significantly higher than the incidence (12.7 per 100,000) in Calif. There was no evidence of a dose-response between mesothelioma incidence and the distances from asbestos deposits and their buffers. Similar results were observed when counties with a higher mesothelioma incidence were excluded.

Conclusion: Occupational exposure to asbestos is a dominant determinant for occurrence of mesothelioma in Calif.. The relation between environmental asbestos and mesothelioma must be assessed based on more detailed exposure information such as individual histories of occupational exposure and residence for cases.